

SEQ ID NO:1

AAGATACTGATAATTCCAGTTTGTCAACCACCTGATGTTACTTTAAGCTTACTCCCTTCAAACGAAACAG

SEQ ID NO:2

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SEQ ID NO:3

AAGATACTGATAATTCAGTTTGTCAACCACCACCTGCTAAATTATCTGTTGTCAGTTTGGCCCTCCTCCAATGgtact
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SEQ ID NO:4

AAGATACTGATAATTCCAGTTTGTCAACCACCACCTGAGGTTGAAACAACAAGCCTCAATGATGTTACTTTAAGCTTACTC
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SEQ ID NO:5

AAGATACTGATAATTCCAGTTTGTCAACCACCACCTGAGGTTGAAACAACAAGCCTCAATGATGTTACTTTAAGCTTACTC
CCTTCAAACGAAACAG

SEQ ID NO:6

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ccagATGTTACTTTAAGCTTACTCCCTTCAAACGAAACAG

SEQ ID NO:7

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SEQ ID NO: 8

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SEQ ID NO:9

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SEQ ID NO:10

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SEQ ID NO:11

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SEQ ID NO:12

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SEQ ID NO:13

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SEQ ID NO:14

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SEQ ID NO: 15

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SEQ ID#16

SEQ ID no.16

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SEQ ID#17

SEQ ID 17

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SEQ ID#18

SEQ ID no.18

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AGA

SEQ ID no. 19

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SEQ ID#20

SEQ ID no.20

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SEO ID no.25

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SEO ID no.26

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SEQ ID no.27

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SEQ ID#30

SEQ ID no.30

translated from no.22 (nt 164 to 3214)

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SEQ ID#31

SEQ ID no.31

translated from no.23 (nt 72 to 3098)

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SEQ ID#32

SEQ ID no.32

translated from no.27 (nt 60 to 3098)

MLFSGGQYSPVGRPEEVLLIYKIFLVIICFHAILVTSLENAGNSSLLSPSAESSLVSLVPYSNGTPDAASEVLSTLNRT
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GCGATGATTATTATTACAAGAAGAAACCAAGACATTACACCATGGTTTTTATGACATTTCTGATTTGGTTTCTTATCTTTC
ATTTTATAAGAAGGTTGGTTTTTAAACAATACACTAAGAATGACTCCTATAAAGAAAAACAAAAAAGGTAGTGAACCTTCA
GCTACCTTTTAAAGAGGCTAAGTTATCTTTGATAACATCATATAAAGCAACTGTTGACTTCAGCCTGTTGGTGAGTTTAG
TTGTGCATGCCTTTGTTGTATATAAGCTAAATCTAGTGACCCATGTGTCAAAAATCTTACTTCTACATTTTTTTGTATT
TATTTTCTACTGTGTAATGTATTCTTTGTAGAATCATGGTTGTTTTGTCTCACGTGATAATTGAGAAAATCCTTGCTC
GTTCCGCAAAATCCTAAAGCTCCTTTTGGAGATGATATAGGATGTGAAATACAGAAACCTCAGTGAAATCAAGAAATAATG
ATCCCAGCCAGACTGAGAAAATGTAAGCAGACAGTGGCACAGTTAGCTCATACAGTGCCTTTGAGCAAGTTAGGAAAAGA
TGCCCCCACTGGGCAGACACAGCCCTATGGGTGATGGTTTGACAAACAGAGTGAGAGACCATATTTTAGCCCCACTCACC
CTCTTGGGTGCACGACCTGTACAGCCAAACACAGCATCCAATATGAATACCCATCCCCTGACCGCATCCCCAGTAGTCAG
ATTATAGAATCTGCACCAAGATGTTTAGCTTTATACCTTGCCACAGAGAGGGATGAACTGTATCCAGACCATGTGTCA
GGAAAATTTGTAACGTAGATGAGGTACATACACTGCCGCTTCTCAAATCCCCAGAGCCTTTAGGAACAGGAGAGTAGACT
AGGATTCTTCTCTTAAAAAGGTACATATATGGAAAAAAATCATATTGCCGTTCTTTAAAAGGCAACTGCATGGTACA
TTGTTGATTGTTTATGACTGGTACACTCTGGCCAGCCAGAGCTATAATTGTTTTTAAATGTGTCTTGAAGAATGCACAG
TGACAAGGGGAGTAGCTATTGGGAACAGGGAAGTGTCTACACTGCTATTGTTGCTACATGTATCGAGCCTTGATTGCTC
CTAGTTATATACAGGGTCTATCTTGCTTCTACCTACATCTGCTTGAGCAGTGCCTCAAGTACATCCTTATTAGGAACAT
TTCAAACCCCTTTTGTGTTAAGTCTTTCACTAAGGTTCTCTTGCAATATTTTCAAGTGAATGTTGGATCTCAGACTAACCA
TAGTAATAATACACTTTCTGTGAGTGCTGACTTGTCTTGCAATATTTCTTTCTGATTTATTTAATTTTCTTGATTT
ATATGTTAAATCAAAAATGTTAAATCAATGAAATAAATTTGCAGTTAAGA

translated from HE6delta24(-up)

translated from HE6delta24 (nt 164 to 3061)

MVFSVRQCGHVGRTEEVLLTFKIFLVIICLHVVLVTSLEEDTDNSSLSPPPAKLSVVSFAPSSNGTPEVETTSLNDVTLS
LLPSNETEKTITIVKTFNASGVKQQRNICNLSSICNDSAFFRGEIMFYDKESTVPQNQHITNGTLTGVLSELKRSE
LNKTLQTLSEYFIMCATAEAQSTLNCTFTIKLNNTMNACAAIAALERVKIRPMEHCCCSVRIPCPSSPEELGKLQCDLQ
DPIVCLADHPRGPPFSSSQSIPVVPRATVLSQVPKATSFAPPDYSPVTHNVPSPIGEIQPLSPQPSAPIASSPAIDMPP
QSETISSPMPQTHVSGTPPPVKASFSSPTVSAPANVNTTSAPPVQTDIVNTSSISDLENQVLQMEKALSLSLEPNLAGE
MINQVSRLHSPDMLAPLAQRLLKVDDIGLQLNFSNTTISLTSPSLALAVIRVNASSFNTTTFVAQDPANLQVSLETQ
APENSIGTITLPSSLMNNLPAHDMELASRVQFNFFETPALFQDPSLENLSLSYVISSSVANLTVRNLTRNVTVTLKHIN
PSQDELTVRCVFDLGRNGGRGGWSDNGCSVKDRRLNETICTCSHLTSFGVLLDLSTSVLPAQMMALTFITYIGCGLSS
IFLSVTLVTYIAFEKIRRDYPSKILIQCAALLLNLVFLDLSWIALYKMQGLCISVAVFLHYFLLVSFTWMGLEAFHMY
LALVKVFNTYIRKYILKFCIVGWGVPVVVTIILTISPNDYGLGSYGKFPNGSPDDFCWINNNVAFYITVVGFCVIFLL
NVSMFIVVLVQLCRIKKKKQLGAQRKTSIQDLRSIAGLTFLGITWGFFAFFAWGPVNVTFMYLFAIFNTLQGGFFIFIFC
VAKENVRKQWRRYLCCGKLRLAENSGNASTERNVGSFSVQNGDVCLHDFTGKQHFNEKEDSCNGKGRMALRRTSKRGS
LFIEQM

translated from HE6delta24(+up)
translated from HE6delta24 (nt 2 to 3061)
GSGGGGAEEAAGGGRRAAAPERGKGGPDGASSQPEDASGRCAQRFSTLFSELAVRMVFSVRQCGHVGRTTEEVLLTFKIFLV
IICLHVVLVTSLEEDTDNSSLSPPPAKLSVVSFAPSSNGTPEVETTSNDVTLS
LLPSNETEKTITIVKTFNASGVKQQRNICNLSSICNDSAFFRGEIMFYDKESTVPQNHITNGTLTGVLSELKRSE
LNKTLQTLSETYFIMCATAEAQSTLNCTFTIKLNNTMNACAAIAALERVKIRPMEHCCCSVRIPCPSSPEELGKLQCDLQ
DPIVCLADHPRGPPFSSSQSIPVVPRATVLSQVPKATSFAPPDYSPVTHNVPSPIGEIQPLSPQPSAPIASSPAIDMPP
QSETISSPMPQTHVSGTPPPVKASFSSPTVSAPANVNTTSAPPVQTDIVNTSSISDLENQVLQMEKALSLSLEPNLAGE
MINQVSRLLHSPPDMLAPLAQRLLKVDDIGLQLNFSNTTISLTSPSLALAVIRVNASSFNTTTFVAQDPANLQVSLETQ
APENSIGTITLPSSLMNNLPAHDMELASRVQFNFFETPALFQDPSLENLSLISYVISSSVANLTVRNLTRNVTVTCLKHIN
PSQDELTVRCVFWDLGRNGGRGGWSDNGCSVKDRRLNETICTSHLTSFGVLLDLSRTSVLPAQMMALTFITYIGCGLSS
IFLSVTLVTYIAFEKIRRDYPSKILIQCAALLLNLFLLDSWIALYKMQGLCISVAVFLHYFLLVSFTWMGLEAFHMY
LALVKVFNTYIRKYILKFCIVGWGVPVVVTIILTISPNDYGLGSYGKFPNGSPDDFCWINNNAVFYITVVGYFCVIFLL
NVSMFIVVLVQLCRIKKKKQLGAQRKTSIQDLRSIAGLTFLLGITWGFAGFAWGPVNVTFMYLFAIFNTLQGFFIFIFYC
VAKENVRKQWRRYLCCGKLRLAENSGNASTERNVGSFSVQNGDVCLHDFGKQHMFEKEDSCNGKGRMALRRTSKRGSL
HFIEQM

translated from SEQ ID16(+up)

translated from no. 16 (nt 2 to 3100)

GSGGGGAEAAAGGGRRAAAPERGKGGPDGASSQPEDASGRCAQRFSTLFSELAVRMVFSVRQCGHVGRTEEVLLTFKIFLV
IIICLHVVLVTSLEEDTDNSSLSPPPDVTLSLLPSNETGVKQPQRNICNLSSICNDSAFFRGEIMFYDKESTVPQNHITN
GTLTGVLSELKRSELNKTQLTSETYFIMCATAEAQSTLNCTFTIKLNNTMNACAAIAALERVKIRPMEHCCCSVRIP
CPSSPEELGKLQCDLQDPVCLADHPRGPPFSSSQSIPVVPRATVLSQVPKATSFAPPDYSPVTHNVPSPIGEIQPLSP
QPSAPIASSPAIDMPPQSETISSPMPQTHVSGTPPPVKASFSSPTVSAPANVNTTSAPPVQTDIVNTSSISDLENQVLQM
EKALSLGSLEPNLAGEMINQVSRLLHSPDMLAPLAQRLLKVDDIGLQLNFSNTTISLTSPSLALAVIRVNASSFNNTT
FVAQDPANLQVSLETQAPENSIGTITLPSSLMNNLPAHDMELASRVQFNFFETPALFQDPSLENLSLISYVISSSVANLT
VRNLTRNVTVTLKHINPSQDELTVRCVFWDLGRNGGRGGWSDNGCSVKDRRLNETICTCSHLTSFGVLLDLSRTSVLPAQ
MMALTFTITYIGCGLSSIIFLSVTLVTYIAFEKIRRDYPSKILIQCAALLLNLFLLDSWIALYKMQGLCISVAVFLHYF
LLVSFTWMGLEAFHMYLALVKVFNTYIRKYILKFCIVGWGVPVVVTIILTISPONYGLGSYGKFPNGSPDDFCWINNNA
VFYITVVGFCVIFLLNVSMFIVVLVQLCRIKKKKQLGAQRKTSIQDLRSIAGLTFLLGITWGF AFFAWGPVNVTFMYLF
AIFNTLQGGFFIFIFYCAKENVRKQWRRYLCCGKLR LAENSDWSKTATNGLKKQTVNQGVSSSSNSLQSSSNSTNSTTLL
VNNDCSVHASGNGNASTERNGVSFSVQNGDVCLHDFTGKQHMFNEKEDSCNGKGRMALRRTSKRGSLSHFIEQM

translated from SEQ ID16(-up)

translated from no.16 (nt 164 to 3100)

MVFSVRQCGHVGRTEEVLLTFKIFLVIICLHVVLVTSLEEDTDNSSLSPPPDVTLSLLPSNETGVKPQRNICNLSSICND
SAFFRGEIMFQYDKESTVPQNQHITNGTLTGVLSELKRSELNKTQLSETYFIMCATAEAQSTLNCTFTIKLNNTMN
ACAAIAALERVKIRPMEHCCCSVRIPCSSPEELGKLQCDLQDPIVCLADHPRGPPFSSSSQSIPVVPRATVLSQVPKATS
FAEPPDYSPVTHNVPSPIGEIQPLSPQPSAPIASSPAIDMPPQSETISSPMPQTHVSGTPPPVKASFSSPTVSAPANVNT
TSAPPVQTDIVNTSSISDLENQVLQMEKALSLSLEPNLAGEMINQVSRLHSPDMLAPLAQRLLKVVDIGLQLNFSN
TTISLTSPSLALAVIRVNASSFNTTTFVAQDPANLQVSLETQAPENSIGTITLPSSLMNNLPAHDMELASRVQFNFFETP
ALFQDPSLENLSLISYVISSSVANLTVRNLTRNVTVTLKHINPSQDELTVRCVFWDLGRNGGRGGWSDNGCSVKDRRLNE
TICTCSHLTSFGVLLDLRTSVLPAQMMALTFITYIGCGLSSIFLSVTLVTYIAFEKIRRDYPSKILIQLC AALLLNLV
FLLDSWIALYKMQGLCISVAVFLHYFLLVSFTWMGLEAFHMYLALVKVFNTYIRKYILKFCIVGWGVPVAVVTIILTISP
DNYGLGSYGKFPNGSPDDFCWINNNAVFYITVVG YFCVIFLLNVSMFIVVLVQLCRIKKKKQLGAQRKTSIQDLRSIAGL
TFLLGITWGF AFAFWGPVNVTFMYLFAIFNTLQGFFIFIFYCVAKENVRKQWRRYLCCGKLRLAENSDWSKTATNGLKKQ
TVNQGVSSSSNSLQSSSNSTNTTLLVNNDCSVHASGNGNASTERNGVSFSVQNGDVCLHDFGKQHM FNEKEDSCNGKG
RMALRRTSKRGSLHFIEQM

translated from SEQ ID17(+up)

translated from no.17 (2 to 3142)

GSGGGGAEEAAGGGRRAAAPERGKGGPDGASSQPEDASGRCAQRFSTLFSELAVRMVFSVRQCGHVGRTEEVLLTFKIFLV
IIICLHVVLVTSLEEDTDNSSLSPPPDVTLSLLPSNETEKTITIVKTFNASGVKQQRNICNLSSICNDSAFFRGEIMFY
DKESTVPQNHITNGTLTGVLSELKRSELNKTQLTSETYFIMCATAEAQSTLNCTFTIKLNNTMNACAAIAALERVK
IRPMEHCCCSVRIPCPSPEELGKLQCDLQDPVCLADHPRGPPFSSSSQIPVVPRATVLSQVPKATSFAPPPDYSPVTH
NVPSPIGEIQPLSPQPSAPIASSPAIDMPPQSETISSPMPQTHVSGTPPPVKASFSSPTVSAPANVNTTSAPPVQTDIVN
TSSISDLENQVLQMEKALSLSLEPNLAGEMINQVSRLLHSPDMLAPLAQRLLKVVDIGLQLNFSNTTISLTSPSLAL
AVIRVNASSFNTTTFVAQDPANLQVSLETQAPENSIGTITLPSSLMNNLPAHDMELASRVQFNFFETPALFQDPSLENLS
LISYVISSSVANLTVRNLTNRVTVTLKHINPSQDELTVRCVFDLGRNGGRGGWSDNGCSVKDRRLNETICTCSHLTSFG
VLLDLSRTSVLPAQMMALTFITYIGCGLSSIFLSVTLVTYIAFEKIRRDYPSKILIQCAALLLNLFLLDSWIALYKM
QGLCISVAVFLHYFLLVSFTWMGLEAFHMYLALVKVFNTYIRKYILKFCIVGWGPVAVVVTIILTISPDPNYGLGSYGKFP
NGSPDDFCWINNNVAFYITVVGFCVIFLLNVSMFIVVLVQLCRIKKKKQLGAQRKTSIQDLRSIAGLTFLLGITWGFAP
FAWGPVNVTFMYLFAIFNTLQGGFFIFIFYCVAKENVRKQWRRYLCCGKLRLAENS DWSKTATNGLKKQTVNQGVSSSSNS
LQSSSNSTNSTTLLVNNDCSVHASGNGNASTERNGVSFSVQNGDVCLHDFTGKQHMFKNEKEDSCNGKGRMALRRTSKRGS
LHFIEQM

translated from SEQ ID17(-up)

translated from no.17 (164 to 3142)

MVFSVRQCGHVGRTEEVLLTFKIFLV
IICLHVVLVTSLEEDTDNSSLSPPPDVTLSLLPSNETEKTITIVKTFNASGVKQPQRNICNLSSICNDSAFFRGEIMFQY
DKESTVPQNHITNGTLTGVLSELKRSELNKTQLTSETYFIMCATAEAQSTLNCTFTIKLNNTMNACAAIAALERVK
IRPMEHCCCSVRIPCPSPEELGKLQCDLQDPVCLADHPRGPPFSSSQSIPVVPRATVLSQVPKATSFAPPDYSPVTH
NVPSPIGEIQPLSPQPSAPIASSPAIDMPPQSETISSPMPQTHVSGTPPPVKASFSSPTVSAPANVNTTSAPPVQTDIVN
TSSISDLENQVLQMEKALSLGSLEPNLAGEMINQVSRLLHSPDMLAPLAQRLLKVVDIGLQLNFSNTTISLTSPSLAL
AVIRVNASSFNTTTFVAQDPANLQVSLETQAPENSIGTITLPSSLMNNLPAHDMELASRVQFNFFETPALFQDPSLENLS
LISYVISSSVANLTVRNLTRNVTVTLKHINPSQDELTVRCVFWDLGRNGGRGGWSDNGCSVKDRRLNETICTCSHLTSFG
VLLDLSRTSVLPAQMMALTFITYIGCGLSSIIFLSVTLVTYIAFEKIRRDYPSKILIQCAALLLLNLVFLDLSWIALYKM
QGLCISVAVFLHYFLLVSFTWMGLEAFHMYLALVKVFNTYIRKYILKFCIVGWGVPVAVVTIILTISPDPNYGLGSYGKFP
NGSPDDFCWINNNAVFYITVVGYFCVIFLLNVSMFIVVLVQLCRIKKKKQLGAQRKTSIQDLRSIAGLTFLLGITWGFAF
FAWGPVNVTFMYLFAIFNTLQGFFIFIFYCVAKENVRKQWRRYLCCGKLRLAENSDWSKTATNGLKKQTVNQGVSSSSNS
LQSSSNSTNSTTLLVNDCSVHASGNGNASTERNGVSFSVQNGDVCLHDFGKQHMFNEKEDSCNGKGRMALRRTSKRGS
LHFIEQM

SEQ ID NO:40

translated from SEQ ID18(+up)

translated from no.18 (nt 2 to 3172)

GSGGGGAEAAAGGGRRAAAPERGKGGPDGASSQPEDASGRCAQRFSTLFSELAVRMVFSVRQCGHVGRTEEVLLTFKIFLV
IICLHVVLVTSLEEDTDNSSLSPPPAKLSVVSFAPSSNGTPEVETTSLNDVTLSELLPSNETGVKPKQRNICNLSSICNDSA
FFRGEIMFQYDKESTVPQNHITNGTLTGVLSELKRSELNKTQLSETYFIMCATAEAQSTLNCTFTIKLNNTMNAC
AAIAALERVKIRPMEHCCCSVRIPCPSPEELGKLQCDLQDPVCLADHPRGPPFSSSQSIPVVPRATVLSQVPKATSFA
EPPDYSPVTHNVPSPIGEIQPLSPQPSAPIASSPAIDMPPQSETISSPMPQTHVSGTPPPVKASFSSPTVSAPANVNTTS
APPVQTDIVNTSSISDLENQVLQMEKALSLGSLEPNLAGEMINQVSRLHSPDMLAPLAQRLLKVVDIGLQLNFSNTT
ISLTSPSLALAVIRVNASSFNNTTTFVAQDPANLQVSLETQAPENSIGTITLPSSLMNNLPAHDMELASRVQFNFFETPAL
FQDPSLENLSLISYVISSSVANLTVRNLTRNVTVTLKHINPSQDELTVRCVFDLGRNGGRGGWSDNGCSVKDRRLNETI
CTCSHLTSFGVLLDLRTSVLPAQMMALTFITYIGCGLSSIFLSVTLVTYIAFEKIRRDYPSKILIQCAALLLNLFVFL
LDSWIALYKMQGLCISVAVFLHYFLLVSFTWMGLEAFHMYLALVKVFNTYIRKYILKFCIVGWGPVAVVVTIILTISPDN
YGLGSYGKFPNGSPDDFCWINNNVAFYITVVGYFCVIFLLNVSMFIVVLVQLCRIKKKKQLGAQRKTSIQDLRSIAGLTF
LLGITWGAFFAWGPVNVTMYLFAIFNTLQGFFIFIFYCVAKENVRKQWRRYLCCGKLRLAENSOWSKTATNGLKKQTV
NQGVSSSNSLQSSSNSTNSTLLVNDCSVHASGNGNASTERNGVSFSVQNGDVCLHDFTGKQHFNEKEDSCNGKGRM
ALRRTSKRGSLSHFIEQM

translated from no.18 (nt 164 to 3172)
translated from SEQ ID18(-up)

MVFSVRQCGHVGRTEEVLLTFKIFLV
IICLHVVLVTSLEEDTDNSSLSPPPAKLSVVSFAPSSNGTPEVETTSLNDVTLSLLPSNETGVKPKQRNICNLSSICNDSA
FFRGEIMFYDKESTVPQNHITNGTLTGVLSELKRSELNKTQLTSETYFIMCATAEAQSTLNCTFTIKLNNTMNAC
AAIAALERVKIRPMEHCCCSVRIPCSSPEELGKLQCDLQDPIVCLADHPRGPPFSSSQSIPVVPRATVLSQVPKATSFA
EPPDYSPVTHNVPSPIGEIQPLSPQPSAPIASSPAIDMPPQSETISSPMPQTHVSGTPPPVKASFSSPTVSAPANVNTTS
APPVQTDIVNTSSISDLENQVLQMEKALSLGSLEPNLAGEMINQVSRLHSPDMLAPLAQRLLKVVDDIGLQLNFSNTT
ISLTSPSLALAVIRVNASSFNTTTFVAQDPANLQVSLETQAPENSIGTITLPSSLMNNLPAHDMELASRVQFNFFETPAL
FQDPSLENLSLISYVISSSVANLTVRNLTRNVTVTLKHINPSQDELTVRCVFWDLGRNGGRGGWSDNGCSVKDRRLNETI
CTCSHLTSFGVLLDLSRTSVLPAQMMALTFITYIGCGLSSIFLSVTLVITYIAFEKIRRDYPSKILIQCAALLLNVLVFL
LDSWIALYKMQGLCISVAVFLHYFLLVSFTWMGLEAFHMYLALVKVFNTYIRKYILKFCIVGWGVPVAVVTIILTISPDN
YGLGSYGKFPNGSPDDFCWINNNAVFYITVVGYFCVIFLLNVSMFIVVLVQLCRIKKKKQLGAQRKTSIQDLRSIAGLTF
LLGITWGFAPFAWGPVNVTFMYLFAIFNTLQGFFIFIFYCVAKENVRKQWRRYLCCGKLRLAENSDWSKTATNGLKKQTV
NQGVSSSSNSLQSSSNSTNSTLLVNDCSVHASGNGNASTERNGVSFSVQNGDVCLHDFTGKQHFNEKEDSCNGKGRM
ALRRTSKRGSLLHFIEQM

translated from SEQ ID19(+up)

translated from no. 19 (nt 2 to 3166)

GS GGGGAE AAGGGRRAAAPERGKGGPDGASSQPEDASGRCAQRFSTLFSELAVRMVFSVRQCGHVGRTEEVLLTFKIFLV
II CLHVVLVTSLEEDTDNSSLSPPEVETTS LNDVTL SLLPSNETEKT KITIVKTFNASGVKPQRNICNLSSICNDSAFF
RGEIMFYDKESTVPQNHITNGTLTGVLSELKRSELNKT LQTLSETYFIMCATAEAQSTLNCTFTIKLNNTMNACAA
IAALERVKIRPMEHCCCSVRIPCPSPEELGKLQCDLQDP IVCLADHPRGPPFSSSQSIPVVPRATVLSQVPKATSFAEP
PDYSPVTHNVPSPIGEIQLSPQPSAPIASSPAIDMPPQSETISSPMPQTHVSGT PPPVKASFSSPTVSAPANVNTTSAP
PVQTDIVNTSSISDLENQVLQMEKALSLGSLEPNLAGEMINQVSRLHSPDMLAPLAQRLLKVDDIGLQLNFSNTTIS
LTSPSLALAVIRVNASSFNTTTFVAQDPANLQVSLETQAPENSIGTITLPSSLMNNLPAHDMELASRVQFNFFETPALFQ
DPSLENLSLISYVISSSVANLTVRNLTRNVTVTLKHINPSQDELTVRCVFDLGRNGGRGGWSONGCSVKDRRLNETICT
CSHLTSFGVLLDLSRTSVLPAQMMALTFITYIGCGLSSIFLSVTLVTYIAFEKIRRDYPSKILIQ LCAALLLNLFLLD
SWIALYKMQGLCISVAVFLHYFLLVSFTWMGLEAFHMYLALVKVFNTYIRKYILKFCIVGWGVPVAVVTIILTISPDNYG
LGSYGKFPNGSPDDFCWINNNAVFYITVVG YFCVIFLLNVSMFIVVLVQLCRIKKKKQLGAQRKTSIQDLRSIAGLTFL
GITWGF AFAWGPVNVTFMYLFAIFNTLQGFFIFIFYCVAKENVRKQWRRYLCCGKLRLAENS DWSKTATNGLKKQTVNQ
GVSSSSNSLQSSSNSTNSTLLVNDCSVHASGNNGASTERNGVSVQNGDVCLHDFTGKQHM FNEKEDSCNGKGRMAL
RRTSKRGS LHFIEQM

translated from SEQ ID19(-up) SEQ ID NO:43
translated from no. 19 (nt 164 to 3166)
MVFSVRQCGHVGRTTEEVLTKIFLV
IICLHVVLVTSLEEDTDNSSLSPPEVETTSLNDVTLSELLPSNETEKTITIVKTFNASGVKPQRNICNLSSICNDSAFF
RGEIMFQYDKESTVPQNHITNGTLTGVLSELKRSELNKTQLSETYFIMCATAEAQSTLNCTFTIKLNNTMNACAA
IAALERVKIRPMEHCCSVRIPCSSPEELGKLQCDLQDPVCLADHPRGPPFSSSQSIPVVPRATVLSQVPKATSFAEP
PDYSPVTHNVPSPIGEIQPLSPQPSAPIASSPAIDMPPQSETISSPMPQTHVSGTPPPVKASFSSPTVSAPANVNTTSAP
PVQTDIVNTSSISDLENQVLQMEKALSLSLEPNLAGEMINQVSRLHSPDMLAPLAQRLLKVDDIGLQLNFSNTTIS
LTSPSLALAVIRVNASSFNTTTFVAQDPANLQVSLETOAPENSIGTITLPSSLMNNLPAHDMELASRVQFNFFETPALFQ
DPSLENLSLISYVISSSVANLTVRNLTRNVTTLKHINPSQDELTVRCVFDLGRNGGRGGWSDNGCSVKDRRLNETICT
CSHLTSFGVLLDLRTSVLPAQMMALTFITYIGCGLSSIIFLSVTLVTYIAFEKIRRDYPSKILIQLCALLLNLFLLD
SWIALYKMQGLCISVAVFLHYFLVSFTWMGLEAFHMYLALVKVFNTYIRKYILKFCIVGWGVPVVVVTIILTISPNDYG
LGSYGKFPNGSPDDFCWINNNVAFYITVVG YFCVIFLLNVSMFIVVLVQLCRIKKKKQLGAQRKTSIQDLRSIAGLTFL
GITWGF AFAWGPVNVTMYLFAIFNTLQGGFFIFICYVAKENVRKQWRRYLCCGKLRLAENS DWSKTATNGLKKQTVNQ
GVSSSSNSLQSSSNSTNTTLLVNDCSVHASGNGNASTERNGVSFSVQNGDVCLHDFGKQHMFNEKEDSCNGKGRMAL
RTSKRGS LHFIEQM

SEQ ID NO:44

translated from SEQ ID20(+up)

translated from no.20 (nt 2 to 3124)

GSGGGGAEAAAGGGRRAAAPERGKGGPDGASSQPEDASGRCAQRFSTLFSELAVRMVFSVRQCGHVGRTEEVLLTFKIFLV
IICLHVVLVTSLEEDTDNSSLSPPEVETTSLNDVTLSELLPSNETGVKPQRNICNLSSICNDSAFFRGEIMFYDKESTV
PQNQHITNGTLTGVLSELKRSELNKTQLTSETYFIMCATAEAQSTLNCTFTIKLNNTMNACAAIAALERVKIRPMEH
CCCSVRIPCPSPEELGKLQCDLQDPVCLADHPRGPPFSSSQSIPVVPRATVLSQVPKATSFAPPDYSPVTHNVPSPI
GEIQPLSPQPSAPIASSPAIDMPPQSETISSPMPQTHVSGTPPPVKASFSSPTVSAPANVNTTSAPPVQTDIVNTSSISD
LENQVLQMEKALSLGSLEPNLAGEMINQVSRLLHSPDMLAPLAQRLLKVDDIGLQLNFSNTTISLTSPSLALAVIRVN
ASSFNTTTFVAQDPANLQVSLETQAPENSIGTITLPSSLMNNLPAHDMELASRVQFNFFETPALFQDPSLENLSLISYVI
SSSVANLTVRNLTRNVTVTLKHINPSQDELTVRVFWDLGRNGGRGGWSDNGCSVKDRRLNETICTCSHLTSFGVLLDLS
RTSVLPAQMMALTFTYIGCGLSSIIFLSVTLVTYIAFEKIRRDYPSKILIQCAALLLNLFLLDSWIALYKMQGLCIS
VAVFLHYFLLVSFTWMGLEAFHMYLALVKVFNTYIRKYILKFCIVGWGVPVVVTIILTISPNDYGLGSYKFPNGSPDD
FCWINNNAVFYITVVGYFCVIFLLNVSMFIVVLVQLCRIKKKKQLGAQRKTSIQDLRSIAGLTFLLGITWGFFAFWGPV
NVTFMYLFAIFNTLQGFFIFIFYCVAKENVRKQWRRYLCCGKLRLAENSWSKTATNGLKKQTVNQGVSSSSNSLQSSSN
STNSTLLVNDCSVHASGNGNASTERNGVSFSVQNGDVCLHDFTGKQHMFNEKEDSCNGKGRMALRRTSKRGSLSHFIEQ
M

translated from SEQ ID20(-up)

translated from no.20 (nt 164 to 3124)

MVFSVRQCGHVGRTEEVLLTFKIFLV
IIICLHVVLVTSLEEDTDNSSLSPPEVETTSLNDVTLSELLPSNETGVKQQRNICNLSSICNDSAFFRGEIMFQYDKESTV
PQNQHITNGTLTGVLSELKRSELNKTQLSETYFIMCATAEAQSTLNCTFTIKLNNTMNACAAIAALERVKIRPMEH
CCCSVRIPCPSPEELGKLQCDLQDPIVCLADHPRGPPFSSSSQIPVVPRATVLSQVPKATSAEPPDYSPVTHNVPSPI
GEIQPLSPQPSAPIASSPAIDMPPQSETISSPMPQTHVSGTPPPVKASFSSPTVSAPANVNTTSAPPVQTDIVNTSSISD
LENQVLQMEKALSLSLEPNLAGEMINQVSRLHSPDMLAPLAQRLLKVDDIGLQLNFSNTTISLTSPSLALAVIRVN
ASSFNTTTFVAQDPANLQVSLETOAPENSIGTITLPSSLMNNLPAHDMELASRVQFNFFETPALFQDPSLENLSLISYVI
SSSVANLTVRNLTRNVTVTCLKHINPSQDELTVRCVFWDLGRNGGRGGWSDNGCSVKDRRLNETICTCSHLTSFGVLLDLS
RTSVLPAQMMALTFTYIGCGLSSIFLSVTLVTYIAFEKIRRDYPSKILIQCAALLLNLVFLLDLSDWIALYKMQGLCIS
VAVFLHYFLVSTWWMGLEAFHMYLALVKVFNTYIRKYILKFCIVGWGVPVVVTIILTISPNDYGLGSYGKFPNGSPDD
FCWINNNNAVFYITVVGyFCVIFLLNVSMFIVVLVQLCRIKKKKQLGAQRKTSIQDLRSIAGLTFLLGITWGF AFFAWGPV
NVTFMLFAIFNTLQGGFFIFIFYCVAKENVRKQWRRYLCCGKLRLAENSWSKTATNGLKKQTVNQGVSSSSNSLQSSSN
STNSTLLVNNDCSVHASGNGNASTERNGVSFSVQNGDVCLHDFTGKQHMFEKEDSCNGKGRMALRRTSKRGSLHFIEQ
M

translated from SEQ ID21(+up)

translated from no.21 (nt 2 to 3148)

GSGGGGAEAAGGGRRAAAPERGKGGPDGASSQPEDASGRCAQRFSTLFSSELAVRMVFSVRQCGHVGRTEEVLLTFKIFLV
IIICLHVVLVTSLEEDTDNSSLSPPPAKLSVVSFAPSSNGTPDVTLSLLPSNETGVKPQRNICNLSSICNDSAFFRGEIMF
QYDKESTVPQNHITNGTLTGVLSELKRSELNKTQLTSETYFIMCATAEAQSTLNCTFTIKLNNTMNACAAIAALER
VKIRPMEHCCCSVRIPCPSPEELGKLQCDLQDPVCLADHPRGPPFSSSQSIPVVPRA TVLSQVPKATSF AEPPDYSPV
THNVPSPIGEIQPLSPQPSAPIASSPAIDMPPQSETISSPMPQTHVSGT PPPVKASFSSPTVSAPANVNTTSAPPVQTDI
VNTSSISDLENQVLQMEKALSLGSLEPNLAGEMINQVSRLHSPDMLAPLAQRLLKVVD DIGLQNFNNTTISLTSPSL
ALAVIRVNASSFNTTTFVAQDPANLQVSLETQAPENSIGTITLPSSLMNNLPAHDMELASRVQFNFFETPALFQDPSLEN
LSLISYVISSSVANLTVRNLTRNVTVTLKHINPSQDELTVRCVFWDLGRNGGRGGWSDNGCSVKDRRLNETICTCSHLTS
FGVLLDLSRTSVLPAQMMALTFITYIGCGLSSI FL SVTLV TYIAFEKIRRDYPSKIL IQLCAALLLNLFLLDSWIALY
KMQGLCISVAVFLHYFLLV SFTWMGLEAFHMYLALVKVFNTYIRKYILKFCIVGWGVP AVVVVTIILTISP DNYGLGSYGK
FPNGSPDDFCWINNNAVFYITVVG YFCVIFLLNVSMFIVVLVQLCRIKKKKQLGAQRKTSIQDLRSIAGLTFLLGITWGF
AFFAWGPVNVTFMYLFAIFNTLQGFFIFIFYCVAKENVRKQWRRYLCCGKLRLAENSDWSKTATNGLKKQTVNQGVSSSS
NSLQSSSNSTNTSTLLVNNDCSVHASGNGNASTERNGVSFSVQNGDVCLHDF TGKQHMFNEKEDSCNGKGRMALRRTSKR
GSLHFIEQM

translated from SEQ ID21(-up)

translated from no.21 (nt 164 to 3148)

MVFSVRQCGHVGRTTEEVLLTFKIFLV
IICLHVVLVTSLEEDTDNSSLSPPPAKLSVVSFAPSSNGTPDVTLSLLPSNETGVKPQRNICNLSSICNDSAFFRGEIMF
QYDKESTVPQNHITNGTLTGVLSELKRSELNKTQLTSETYFIMCATAEAQSTLNCTFTIKLNNTMNACAAIAALER
VKIRPMEHCCCSVRIPCSPSSPEELGKLQCDLQDPVCLADHPRGPPFSSSQSIPVVPRATVLSQVPKATSF AEPPDYSPV
THNVPSPIGEIQPLSPQPSAPIASSPAIDMPPQSETISSPMPQTHVSGTPPPVKASFSSPTVSAPANVNTTSAPPVQTDI
VNTSSISDLENQVLQMEKALSLGSLEPNLAGEMINQVSRLHSPDMLAPLAQRLLKVDDIGLQLNFSNTTISLTSPSL
ALAVIRVNASSFNTTTFVAQDPANLQVSLETQAPENSIGTITLPSSLMNNLPAHDMELASRVQFNFFETPALFQDPSLEN
LSLISYVISSSVANLTVRNLTRNVTVTLKHINPSQDELTVRCVFWDLGRNGGRGGWSDNGCSVKDRRLNETICTCSHLTS
FGVLLDLRTSVLPAQMMALTFITYIGCGLSSIIFLSVTLVTYIAFEKIRRDYPSKILIQLC AALLLNLFLLDSWIALY
KMQGLCISVAVFLHYFLLVSFTWMGLEAFHMYLALVKVFNTYIRKYILKFCIVGWGVPVVVVTIILTISP DNYGLGSYGK
FPNGSPDDFCWINNNAVFYITVVG YFCVIFLLNVSMFIVVLVQLCRIKKKKQLGAQRKTSIQDLRSIAGLTFLLGITWGF
AFFAWGPVNVTFMYLFAIFNTLQGFFIFIFYCVAKENVRKQWRRYLCCGKLRLAENSDWSKTATNGLKKQTVNQGVSSSS
NSLQSSSNSTNTSTLLVNNDCSVHASGNGNASTERNGVSFSVQNGDVCLHDFTGKQHMFNEKEDSCNGKGRMALRRTSKR
GSLHFIEQM

translated from SEQ ID22(+up)

translated from no.22 (nt 2 to 3214)

GSGGGGAEAAAGGGRRAAAPERGKGGPDGASSQPEDASGRCAQRFSTLFSELAVRMVFSVRQCGHVGRTEEVLLTFKIFLV
IICLHVVLVTSLEEDTDNSSLSPPPAKLSVVSFAPSSNGTPEVETTSLNDVTL SLLPSNETEKT KITIVKTFNASGVKPQ
RNICNLSSICNDSAFFRGEIMFQYDKESTVPQNQHITNGTLTGVLSELKRSELNKTQLTSETYFIMCATAEAQSTLN
CTFTIKLNNTMNACAAIAALERVKIRPMEHCCCSVRIPCPSSPEELGKLQCDLQDPVCLADHPRGPPFSSSSQIPVVP
ATVLSQVPKATSFAEPPDYSPVTHNVPSPIGEIQLSPQPSAPIASSPAIDMPPQSETISSPMPQTHVSGTPPPVKASFS
SPTVSAPANVNTTSAPPVQTDIVNTSSISDLENQVLQMEKALSLGSLEPNLAGEMINQVSRLLHSPDMLAPLAQRLLKV
VDDIGLQLNFSNTTISLTSPSLALAVIRVNASSFNTTTFVAQDPANLQVSLETQAPENSIGTITLPSLMNNLPAHDMEL
ASRVQFNFFETPALFQDPSLENLSLISYVISSSVANLTVRNLTRNVTVTLKHINPSQDELTVRCVFWDLGRNGGRGGWSD
NGCSVKDRRLNETICTCSHLTSFGVLLDLSRTSVLPAQMMALTFITYIGCGLSSIFLSVTLVTYIAFEKIRRDYPSKILI
QLCAALLLNLVFLDLSWIALYKMQGLCISVAVFLHYFLLVSFTWMGLEAFHMYLALVKVFNTYIRKYILKFCIVGWGVP
AVVTIILTISPDNYGLGSYGKFPNGSPDDFCWINNNAVFYITVVG YFCVIFLLNVSMFIVVLVQLCRIKKKKQLGAQRK
TSIQDLRSIAGLTFLLGITWGF AFAWGPVNVT FMYLFAIFNTLQGFFIFIFYCVAKENVRKQWRRYLCCGKLRLAENS
WSKTATNGLKKQTVNQGVSSSSNSLQSSSNSTNSTTLLVNNDCSVHASGNGNASTERNGVSFSVQNGDVCLHDFTGKQHM
FNEKEDSCNGKGRMALRRTSKRGS LHFIEQM

translated from SEQ ID23(+up)
translated from no.23 (nt 3 to 3098)
QPVTGTRRCTRSLPISSELPVRMLFSGGQYSPVGRPEEVLLIYKIFLVIICFHVILVTSLKENGNSLLSPSAESSLVS
LIPYSNGTPDAASEVLSTLNKTEKSKITIVKTFNASGVKSQRNICNLSSLCNDSVFFRGEIVFQHDEHDHNVTONQDTANG
TFAGVLSLSELKRSELNKTQLTLSETYFIVCATAEAQSTVNCTFTVKLNETMNVCAMMVTFTQTVQIRPMEQCCCSPTPC
PSSPEELEKLQCELODPVCLADQPHGPPSSSSKPVVPQATIISHVASDFSLAEPLDHALMTPSTPSLTQESNLPSPQP
TIPLASSPATDLPVQSVVVSSLPQTDLSHTLSPVQSSIPSTTPAPSVPTLVTISTPPGETVVNTSTVSDLEAQVSQME
KALSLGSLEPNLAGEMVNRVSKLLHSPALLAPLAQRLLKVVDIAIGLQLNFSSTTISLTSPSLALAVIRVNASNFNTTTF
AAQDPTNLQVSLTPPPENSIGAITLPSSLMNLPANDVELASRIQFNFFETPALFQDPSLENLTLISYVISSSVTNMTI
KNLTRNVTVALKHINPSPDDLTVKCVFWDLGRNGGKGGWSSDGC SVKDKRMNETICTCSHLTSFGILLDLRTSLPPSQM
MALTFITYIGCGLSSIFLSVTLVTYIAFEKIRRDYPSKILIQCAALLLNLIFFLLDSWIALYNTRGFCIAVAVFLHYFL
LVSFTWMGLEAFHMYLALVKVFNTYIRKYILKFCIVGWGIPAVVVSIVLTISPONYGIGSYGKFPNGTPDDFCWINSNVV
FYITVVG YFCVIFLLNVSMFIVVLVQLCRIKKKKQLGAQRKTSIQDLRSIAGLTFLLGITWGF AFAWGPVNVTFMYLFA
IFNTLQGFFIFIFYCAKENVRKQWRRYLCCGKLRLAENSDWSKTATNGLKKQTVNQGVSSSSNSLQSSCNSTNSTLLV
NSDCSVHASGNGNASTERNGVSFSVQNGDVCLHDLTGKQHMFSKEDSCNGKSRIALRRTSKRGS LHFIEQM

translated from SEQ ID24(+up)
translated from no.24 (nt 3 to 3060)

QPVTGTRRCTRSFLPISSELPVRMLFSGGQYSPVGRPEEVLLIYKIFLVIICFHVILVTSLKENGNSLLSPSDAASEVL
STLNKTEKSKITIVKTFNASGVKSQRNICNLSSLCNDSVFFRGEIVFQHDEHDHNVTONQDTANGTFAGVLSLSELKRSEL
NKTQLTLSETYFIVCATAEAQSTVNCTFTVKLNETMNVCMAMVTFQTVQIRPMEQCCCSPRTPCPSSPEELEKLQCELQD
PIVCLADQPHGPPLSSSSKPVVPQATIISHVASDFSLAEPLDHALMTPSTPSLTQESNLPSQPPTIPLASSPATDLPVQS
VVVSSLPQTDLSHTLSPVQSSIPSPTTPAPSVPTELVTISTPPGETVVNTSTVSDLEAQVSQMEKALSLSLEPNLAGEM
VNRVSKLLHSPALLAPLAQRLLKVDAIGLQNFSSTTISLTSPSLALAVIRVNASNFNTTTFAAQDPTNLQVSLETTP
PENSIGAITLPSSLMNNLPANDVELASRIQFNFFETPALFQDPSLENLTLISYVISSSVTNMTIKNLTRNVTVALKHINP
SPDDLTVKCVFWDLGRNGGKGGWSSDGC SVKDKRMNETICTCSHLTSFGILLDL SRTSLPPSQMMALT FITYIGCGLSSI
FLSVTLVTYIAFEKIRRDYPSKILIQCAALLLNLI FL L DSWIALY NTRGFCIAVAVFLHYFLLVSFTWMGLEAFHMYL
ALVKVFNTYIRKYILKFCIVGWGIPAVVVSIVLTISP DNYGIGSYGKF PNGT PDDFCWINSNVVFYITVVG YFCVIFLLN
VSMFIVVLVQLCRIKKKKQLGAQRKTSIQDLRSIAGLTFL LGITWGF A FFAWGPVNVTFMYLFAIFNTLQGFFIFIFYCA
AKENVRKQWRRYLCCGKLR LAENSDWSKTATNGLKKQTVNQGVSSSSNSLQSSCNSTNSTTLLVNSDCSVHASGNGNAST
ERNGVSVSVQNGDVCLHDLTGKQHMFS DKEDSCNGKSRIALRRTSKRGSLHFIEQM

SEQ ID NO: 51

translated from SEQ ID24(-up)

translated from no.24 (nt 72 to 3060)

MLFSGGQYSPVGRPEEVLLIYKIFLVIICFHVILVTSLKENGNSLLSPSDAASEVL
STLNKTEKSKITIVKTFNASGVKSQRNICNLSSLCNDSVFFRGEIVFQHDEDHNVTONQDTANGTFAGVLSLSELKRSEL
NKTLOTLSETYFIVCATAEAQSTVNCTFTVKLNETMNVCMAMVTFQTVQIRPMEQCCSPRTPCPSSPEELEKLQCELQD
PIVCLADQPHGPPLSSSSKPVVPQATIISHVASDFSLAEPLDHALMTPSTPSLTQESNLPSQPPTIPLASSPATDLPVQS
VVVSSLPQTDLSHTLSPVQSSIPSPPTTPAPSVPTTELVTISTPPGETVVNTSTVSDLEAQVSQMEKALSLSLEPNLAGEM
VNRVSKLLHSPALLAPLAQRLLKVVDAGLQLNFSSTTISLTSPSLALAVIRVNASNFNTTTFAAQDPTNLQVSLETTP
PENSIGAITLPSSLMNNLPANDVELASRIQFNFFETPALFQDPSLENLTLISYVISSSVTNMTIKNLTRNVTVALKHINP
SPDDLTVKCVFWDLGRNGGKGGWSSDGCSVKDKRMNETICTCSHLTSFGILLDLRTSLPPSQMMALTFITYIGCGLSSI
FLSVTLVTYIAFEKIRRDYPSKILIQLCAALLLNLIIFLLDSWIALYNTRGFCIAVAVFLHYFLLVSFTWMGLEAFHMYL
ALVKVFNTYIRKYILKFCIVGWGIPAVVVSIVLTISPDNYGIGSYGKFPNGTPDDFCWINSNVVYFITYVVGYFCVIFLLN
VSMFIVVLVQLCRIKKKKQLGAQRKTSIQDLRSIAGLTFLLGITWGFAPFAWGPVNVTFMYLFAIFNTLQGFFIFIFYCA
AKENVRKQWRRYLCCGKLRLAENSDWSKTATNGLKKQTVNQGVSSSSNSLQSSCNSTNSTTLLVNSDCSVHASGNGNAST
ERNGVFSVQNGDVCLHDLTGKQHMFSKEDSCNGKSRIALRRTSKRGSLSHFIEQM

translated from SEQ ID25(+up)

translated from no.25 (nt 3 to 3089)

QPVTGTRRCTRSFLPISSELPVRMLFSGGQYSPVGRPEEVLLIYKIFLVIICFHVILVTSLKENGNSLLSPSAESSLVS
LIPYSNDAASEVLSTLNKTEKSKITIVKTFNASGVKSQRNICNLSSLCNDSVFFRGEIVFQHDHNVTONQDTANGTFA
GVLSLSELKRSELNKTQLTLSETYFIVCATAEAQSTVNCTFTVKLNETMNVCAMMVTFTQTVQIRPMEQCCCSPTPCPSS
PEELEKLQCELQDPIVCLADQPHGPPLSSSSKPVVPQATIISHVASDFSLAEPLDHALMTPSTPSLTQESNLPSPTIP
LASSPATDLPVQSVVSSLPQTDLSHTLSPVQSSIPSPTTPAPSVPTLVTISTPPGETVVNTSTVSDLEAQSQMEKAL
SLGSLEPNLAGEMVNRVSKLLHSPALLAPLAQRLLKVVD AIGLQLNFSSTTISLTSPSLALAVIRVNASNFNTTFAAQ
DPTNLQVSLETPPPENSIGAITLPSSLMNNLPANDVELASRIQFNFFETPALFQDPSLENLTLISYVISSSVTNMTIKNL
TRNVTVALKHINPSPDDLTVKCVFWDLGRNGGKGGWSSDGC SVKDKRMNETICTCSHLTSFGILLDL SRTSLPPSQMMAL
TFITYIGCGLSSIFLSVTLVTYIAFEKIRRDYPSKILIQCAALLLNLI FL L DSWIALYNTRGFCIAVAVFLHYFLLVS
FTWMGLEAFHMYLALVKVFNTYIRKYILKFCIVGWGIPAVVVSIVLTISP DNYGIGSYGKFPNGTPDDFCWINSNVFYI
TVVGYFCVIFLLNVSMFIVVLVQLCRIKKKKQLGAQRKTSIQDLRSIAGLTFLLGITWGF A FFAWGPVNVTFMYLFAIFN
TLQGFFIFIFYCAAKENVRKQWRRYLCCGKLRLAENS DWSKTATNGLKKQTVNQGVSSSSNSLQSSCNSTNSTLLVNSD
CSVHASGNNGNASTERNGVSFSVQNGDVCLHDLTGKQHMFS D KEDSCNGKSRIALRRTSKRGS LHFIEQM

translated from SEQ ID25(-up)

translated from no.25 (nt 72 to 3089)

MLFSGGQYSPVGRPEEVLLIYKIFLVIICFHVILVTSKENGNSLLSPSAESSLV
LIPYSNDAASEVLSTLNKTEKSKITIVKTFNASGVKSQRNICNLSSLCNDSVFFRGEIVFQHDEHDHNVTONQDTANGTFA
GVLSELSELKRSELNKTQLSETYFIVCATAEAQSTVNCTFTVKLNETMNVCMAMVTFQTVQIRPMEQCCCSPTPCPSS
PEELEKLQCELQDPIVCLADQPHGPPLSSSSKPVVPQATIISHVASDFSLAEPLDHALMTPSTPSLTQESNLPSPQPTIP
LASSPATDLPVQSVVVSSLPQTDLSHTLSPVQSSIPSPPTTPAPSVPTELVTISTPPGETVVNTSTVSDLEAQSQMEKAL
SLGSLEPNLAGEMVNRVSKLLHSPALLAPLAQRLLKVVDAGLQLNFSSTTISLTSPSLALAVIRVNASNFNTTFAAQ
DPTNLQVSLETPPPENSIGAITLPSSLMNNLPANDVELASRIQFNFFETPALFQDPSLENLTLISYVISSSVTNMTIKNL
TRNVTVALKHINPSPDDLTVKCVFWDLGRNGGKGGWSSDGCSVKDKRMNETICTCSHLTSFGILLDLRSTSLPPSQMMAL
TFITYIGCGLSSIFLSVTLVTYIAFEKIRRDYPSKILIQCAALLLNLIIFLLDSWIALYNTRGFCIAVAVFLHYFLLVS
FTWMGLEAFHMYLALVKVFNTYIRKYILKFCIVGWGIPAVVVSIVLTISPNDYGIGSYGKFPNGTPDDFCWINSNVFYI
TVVGYFCVIFLLNVSMFIVVLVQLCRIKKKKQLGAQRKTSIQDLRSIAGLTFLLGITWGFAPFAWGPVNVTFMYLFAIFN
TLQGFFIFIFYCAAKENVRKQWRRYLCCGKLRLAENS DWSKTATNGLKKQTVNQGVSSSSNSLQSSCNSTNSTLLVNSD
CSVHASGNNGNASTERNGVSFSVQNGDVCLHDLTGKQHMFSKEDSCNGKSRIALRRTSKRGSLSHFIEQM

translated from SEQ ID26(+up)

translated from 26 (nt 3 to 3017)

QPVTGTRRCTRSLPISSELPVRMLFSGGQYSPVGRPEEVLLIYKIFLVIICFHVILVTSCLKDAASEVLSTLNKTEKSKI
TIVKTFNASGVKSQRNICNLSSLCNDSVFFRGEIVFQHDEDHNVTONQDTANGTFAGVLSLSELKRSELNKTQLTSETY
FIVCATAEAQSTVNCTFTVKLNETMNVCAMMVTFTQTVQIRPMEQCCCSPTPCPSSPEELEKLQCELDQPIVCLADQPHG
PPLSSSSSKPVVPQATIISHVASDFSLAEPLDHALMTPSTPSLTQESNLPSPQPTIPLASSPATDLPVQSVVVSSLPQTDL
SHTLSPVQSSIPSTTPAPSVPTELVTISTPPGETVVNTSTVSDLEAQVSQMEKALSLGSLEPNLAGEMVNRVSKLLHSP
PALLAPLAQRLLKVVDAGLQLNFSSTTISLTSPSLALAVIRVNASNFNTTTFAAQDPTNLQVSLETPPPENSGAITLP
SSLMNNLPANDVELASRIQFNFFETPALFQDPSLENLTLSYVISSSVTNMTIKNLTRNVTVALKHINPSPDDLTVKCVF
WDLGRNGGKGGWSSDGC SVKDKRMNETICTCSHLTSFGILLDLRSTSLPPSQMMALTFITYIGCGLSSI FL SVTLVTYIA
FEKIRRDYPSKILIQ LCAALLLNLI FL LDSWIALYNTRGFCIAVAVFLHYFLLVSFTWMGLEAFHMYLALVKVFNTYIR
KYILKFCIVGWGIPAVVVSIVLTISP DNYGIGSYGKFPNGTPDDFCWINSNVV FYITVVG YFCVIFLLNVSMFIVVLVQL
CRIKKKKQLGAQRKTSIQDLRSIAGLTFLLGITWGF AFFAWGPVNVTFMYLFAIFNTLQGFFIFIFYCAAKENVRKQWRR
YLCCGKLRLAENSDWSKTATNGLKKQTVNQGVSSSSNSLQSSCNSTNSTTLLVNSDCSVHASGNNGNASTERNGVSFSVQN
GDVCLHDLTGKQHMFSKEDSCNGKSRIALRRTSKRGSLHFIEQM

translated from SEQ ID26(-up)

SEQ ID NO:55

translated from 26 (nt 72 to 3017)

MLFSGGQYSPVGRPEEVLLIYKIFLVIICFHVILVTSLKDAASEVLSTLNKTEKSKI
TIVKTFNASGVKSQRNICNLSSLCNDSVFFRGEIVFQHDEHNVTONQDTANGTFAGVLSLSELKRSELNKTQLTSETY
FIVCATAEAQSTVNCTFTVKLNETMNVCAMMVTFQTVQIRPMEQCCSPRTPCPSSPEELEKLQCELDQPIVCLADQPHG
PPLSSSSKPVVPQATIISHVASDFSLAEPLDHALMTPSTPSLTQESNLSPQPTIPLASSPATDLPVQSVVVSSLPQTDL
SHTLSPVQSSIPSPTTPAPSVPTLVTISTPPGETVVNTSTVSDLEAQVSQMEKALSLGSLEPNLAGEMVNRVSKLLHSP
PALLAPLAQRLLKVVDIAIGLQLNFSSTTISLTSPSLALAVIRVNASNFNTTTFAAQDPTNLQVSLETPPPENSIGAITLP
SSLMNNLPANDVELASRIQFNFFETPALFQDPSLENLTLSYVISSSVTNMTIKNLTRNVTVALKHINPSPDDLTVKCVF
WDLGRNGGKGGWSSDGC SVKDKRMNETICTCSHLTSFGILLDLRSTSLPPSQMMALTFITYIGCGLSSIFLSVTLVTYIA
FEKIRRDYPSKILIQLCAALLLNLI FLDSWIALYNTRGFCIAVAVFLHYFLLVSFTWMGLEAFHMYLALVKVFNTYIR
KYILKFCIVGWGIPAVVVSIVLTISP DNYGIGSYGKFPNGTPDDFCWINSNVVFYITVVG YFCVIFLLNVSMFIVVLVQL
CRIKKKKQLGAQRKTSIQDLRSIAGLTFLLGITWGF AFAFWGPVNVTFMYLFAIFNTLQGFFIFIFYCAAKENVRKQWRR
YLCCGKLRLAENSDWSKTATNGLKKQTVNQGVSSSSNSLQSSCNSTNSTLLVNSDCSVHASGNGNASTERNGVSFSVQN
GDVCLHDLTGKQHMFSKDSCNGKSRIALRRTSKRGSLHFIEQM

translated from SEQ ID27(+up)

translated from no. 27 (nt 3 to 3098)

RTCRCAQSLLPLFSELPVRMLFSGGQYSPVGRPEEVLLIYKIFLVIICFHAILVTSCLKENAGNSSLLSPSAESSLVSLVP
YSNGTPDAASEVLSTLNRTKSKITILKTFNASGVKSQRNICNLSSICSDSVFFRGEIVFQHDDHYNVTQNQDIVNSTFA
GVLSELKRTLNKTLQTLSETYFIVCATAEAQNTLNCTFTVKLNETMNVCAMMVTFKSVQIRPMEQCCCSPTPCPSS
PEELEKLQCDLQDPVCLADQPHGPPVSSSSKPVVPVQATIFSHVASDFSLAEPLDHALMTSSTPSLAQETRLPSPQPT
ISLTSSPAIDLVPQHVAVASSSLPQTDLSHTLSPVQSSIPSPTTAAPSVPEKVVAISTPPGETVVNTSSVDPLEAQVSQME
KALSLGSLEPNLAGEMVNRVSKLLHSPALALLAPLAQRLLKVVDIAIGLQLNFSSTTISLTSPSLALAVIRVNASNFNTTTF
AAQDPANLQVSLEAQAPKNSIGAITLPSSLMSNLPASEVELASRVQFNFFETPALFQDPSLENLSLISYVISSSVTNMTI
KNLTRNVTVALKHINPSQDDLTVKCVFWDLNRNGGRGGWSSDGC SVKEKRMNETICTCSHLTSFGILLDLRSRTSLPPSQM
MALTFITYIGCGLSSIFLSVTLVTYIAFEKIRRDYPSKILIQCAALLLNLFLLDSWIALYNARGFCISVAVFLHYFL
LVSFTWMGLEAFHMYLALVKVFNTYIRKYILKFCIVGWGIPAVVVSIVLTISPDNYGIGSYGKFPNGTPDDFCWINSSVV
FYITVVG YFCVIFLLNVSMFIVVLVQLCRIKKKKQLGAQRKTSIQDLRSIAGLTFLLGITWGF AFAWGPVNLT FMYLFA
IFNTLQGFFIFIFYCAAKENVRKQWRRYLCCGKLRLAENS DWSKTATNGLKKQTVNQGVSSSSNSLQSSCNSTNSTLLV
NSDCSVHASGNGNASTERNGVSFSVQNGDVCLHDLTGKQHMFSDKEDSCNGKSRMALRRTSKRGS LHFIEQM

translated from SEQ ID28(+up)

translated from no.28 (nt 3 to 3050)

RTCRCAQSLLPLFSELPVRMLFSGGQYSPVGRPEEVLLIYKIFLVIICFHAILVTSLENAGNSSLLSPSDAASEVLSTL
NRTEKSKITILKTFNASGVKSQRNICNLSSICSDSVFFRGEIVFQHDDHYNVTQNQDIVNSTFAGVLSLSELKRTELNKT
LQTLSETYFIVCATAEAQNTLNCTFTVKLNENMNVCMAMVTFKSVQIRPMEQCCCSPTPCPSSPEELEKLQCDLQDPIV
CLADQPHGPPVSSSSKPVVPVQATIFSHVASDFSLAEPLDHALMTSSTPSLAQETRLPSPQPTISLTSSPAIDLVPQHV
VASSSLPQTDLSHTLSPVQSSIPSPTTAAPSVPEKVVAISTPPGETVVNTSSVPDLEAQVSQMEKALSLSLEPNLAGEM
VNRVSKLLHSPALLAPLAQRLLKVVDIAIGLQLNFSSTTISLTSPSLALAVIRVNASNFNTTTFAAQDPANLQVSLEAQA
PKNSIGAITLPSSLMSNLPASEVELASRVQFNFFETPALFQDPSLENLSLISYVISSSVTNMTIKNLTRNVTVALKHINP
SQDDLTVKCVFWDLNRNGGRGGWSSDGC SVKEKRMNETICTCSHLTSFGILLDLSTSLPPSQMMALTFITYIGCGLSSI
FLSVTLVTYIAFEKIRRDYPSKILIQLC AALLLNLFLLDSWIALYNARGFCISVAVFLHYFLLVSFTWMGLEAFHMYL
ALVKVFNTYIRKYILKFCIVGWGIPAVVVSIVLTISPDNYGIGSYGKFPNGTPDDFCWINSSVVFYITVVGYFCVIFLLN
VSMFIVVLVQLCRIKKKKQLGAQRKTSIQDLRSIAGLTFLLGITWGF AFWGPVNLT FMYLFAIFNTLQGFFIFIFYCA
AKENVRKQWRRYLCCGKLRLAENS DWSKTATNGLKKQTVNQGVSSSSNSLQSSCNSTNSTTLLVNSDCSVHASGNGNAST
ERNGVSVSVQNGDVCLHDLTGKQHMFSDKEDSCNGKSRMALRRTSKRGS LHFIEQM

translated from no.28 (nt 60 to 3050) translated from SEQ ID28(-up) SEQ ID NO:58

MLFSGGQYSPVGRPEEVLLIYKIFLVIICFHAILVTSLENAGNSSLLSPSDAASEVLSTL
NRTEKSKITILKTFNASGVKSQRNICNLSSICSDSVFFRGEIVFQHDDHYNVTQNQDIVNSTFAGVLSLSELKRTELNKT
LQTLSETYFIVCATAEAQNTLNCTFTVKLNETMNVCMAMVTFKSVQIRPMEQCCCSPTPCPSSPEELEKLQCDLQDPIV
CLADQPHGPPVSSSSKPVVPVQATIFSHVASDFSLAEPLDHALMTSSTPSLAQETRLPSPQPTISLTSSPAIDLVPQHV
VASSSLPQTDLSHTLSPVQSSIPSPTTAAPSVEKVVAISTPPGETVVNTSSVPDLEAQVSQMEKALSLGSLEPNLAGEM
VNRVSKLLHSPALALLAPLAQRLLKVDAIGLQLNFSSTTISLTSPSLALAVIRVNASNFNTTTFAAQDPANLQVSLEAQA
PKNSIGAITLPSSLMSNLPASEVELASRVQFNFFETPALFQDPSLENLSLISYVISSSVTNMTIKNLTRNVTVALKHINP
SQDDLTVKCVFWDLNRNGGRGGWSSDGC SVKEKRMNETICTCSHLTSFGILLDL SRTSLPPSQMMALTFITYIGCGLSSI
FLSVTLVTYIAFEKIRRDYPSKILIQ LCAALLLNVLFLDSWIALYNARGFCISVAVFLHYFLLVSFTWMGLEAFHMYL
ALVKVFNTYIRKYILKFCIVGWGIPAVVVSIVLTISPDNYGIGSYGKFPNGTPDDFCWINSSVVFYITVVG YFCVIFLLN
VSMFIWVLVQLCRIKKKKQLGAQRKTSIQDLRSIAGLTFLLGITWGFAFFAWGPVNLT FMYLFAIFNTLQGGFFIFIFYCA
AKENVRKQWRRYLCCGKLRLAENS DWSKTATNGLKKQTVNQGVSSSSNSLQSSCNSTNSTTLLVNSDCSVHASGNGNAST
ERNGVSF SVQNGDVCLHDLTGKQHMFSDKEDSCNGKSRMALRRTSKRGS LHFIEQM

SEQ ID NO:59

translated from SEQ ID29(+up)

translated from no.29 (nt 3 to 3014)

RTCRCAQSLLPLFSELPVRMLFSGGQYSPVGRPEEVLLIYKIFLVIICFHAILVTSLKDAASEVLSTLNRTEKSKITILK
TFNASGVKSQRNICNLSSICSDSVFFRGEIVFQHDDHYNVTQNQDIVNSTFAGVLSLSELKRTELNKTQLTSETYFIVC
ATAEAQNTLNCTFTVKNLNETMNVCAMMVTFSVQIRPMEQCCCSPRTPCPSSPEELEKLQCDLQDPIVCLADQPHGPPVS
SSSKPVVPVQATIFSHVASDFSLAEPLDHALMTSSTPSLAQETRLPSPQPTISLTSSPAIDLVPQHVAVASSSLPQTDLS
HTLSPVQSSIPSPTTAAPSVPEKVVAISTPPGETVVNTSSVDPLEAQVSQMEKALSLGSLEPNLAGEMVNRVSKLLHSPL
ALLAPLAQRLLKVVDAILQLNFSSTTISLTSPSLALAVIRVNASNFNTTTFAAQDPANLQVSLAQAPKNSIGAITLPS
SLMSNLPASEVELASRVQFNFFETPALFQDPSLENLSLISYVISSSVTNMTIKNLTRNVTVALKHINPSQDDLTVKCVFW
DLNRNGGRGGWSSDGC SVKEKRMNETICTCSHLTSFGILLDL SRTSLPPSQMMALT FITYIGCGLSSIFLSVTLVTYIAF
EKIRRDYPSKILIQLC AALLLNLFLLDSWIALYNARGFCISVAVFLHYFLLVSFTWMGLEAFHMYLALVKVFNTYIRK
YILKFCIVGWGIPAVVVSIVLTISP DNYGIGSYGKFPNGT PDDFCWINSSVVFYITVVG YFCVIFLLNVSMFIVVLVQLC
RIKKKKQLGAQRKTSIQDLRSIAGLTFL LGITWGF AFFAWGPVNLTFMYLFAIFNTLQGFFIFIFYCAAKENVRKQWRRY
LCCGKLRLAENS DWSKTATNGLKKQTVNQGVSSSSNSLQSSCNSTNSTTLLVNSDCSVHASGNGNASTERNGVSFSVQNG
DVCLHDLTGKQHMFSKEDSCNGKSRMALRRTSKRGSLHFIEQM

translated from SEQ ID29(-up)

SEQ ID NO:60

translated from no.29 (nt 60 to 3014)

MLFSGGQYSPVGRPEEVLLIYKIFLVIICFHAILVTSLKDAASEVLSTLNRTEKSKITILK
TFNASGVKSQRNICNLSSICSDSVFFRGEIVFQHDDHYNVTQNQDIVNSTFAGVLSLSELKRTELNKTLQTLSETYFIVC
ATAEAQNTLNCTFTVKLNETMNVCAMMVTFKSVQIRPMEQCCCSPTPCPSSPEELEKLQCDLQDPVCLADQPHGPPVS
SSSKPVPVVPQATIFSHVASDFSLAEPLDHALMTSSTPSLAQETRLPSPQPTISLTSSPAIDL PVQHVVASSSLPQTDLS
HTLSPVQSSIPSPTTAAPSVPEKVVAISTPPGETVVNTSSVPDLEAQVSQMEKALSLGSLEPNLAGEMVNRVSKLLHSPL
ALLAPLAQRLLKVVD AIGLQLNFSSTTISLTSPSLALAVIRVNASNFNTTTFAAQDPANLQVSLEAQAPKNSIGAITLPS
SLMSNLPASEVELASRVQFNFFETPALFQDPSLENLSLISYVISSSVTNMTIKNLTRNVTVALKHINPSQDDLT VKCVFW
DLNRNGGRGGWSSDGC SVKEKRMNETICTSHLT SFGILLDSRTSLPPSQMMALT FITYIGCGLSSIFLSVTLVTYIAF
EKIRRDYPSKILIQ LCAALLLNLFLLDSWIALYNARGFCISVAVFLHYFLLVSFTWMGLEAFHMYLALVKVFNTYIRK
YILKFCIVGWGIPAVVVSIVLTISPDNYGIGSYGKFPNGTPDDFCWINSSVVFYITVVG YFCVIFLLNVSMFIVVLVQLC
RIKKKKQLGAQRKTSIQDLRSIAGLTFLLGITWGF AFAWGPVNLT FMYLFAIFNTLQGFFIFIFYCAAKENVRKQWRRY
LCCGKLRLAENS DWSKTATNGLKKQTVNQGVSSSSNSLQSSCNSTNSTLLVNSDCSVHASGNNGNASTERNGVSFSVQNG
DVCLHDLTGKQHMFS DKEDSCNGKSRMALRRTSKRGS LHFIEQM